

MICRO MK.4 BOYER BRANSDEN ELECTRONIC IGNITION SYSTEM FOR
UNIT CONSTRUCTION SINGLE CYLINDER 4-STROKE TRIUMPH/BSA ENGINES
WITH 12 VOLT ELECTRICS AND SIDEPOINTS

Comprising:-

- a) Transistor box (rectangular black box with 5 wires & adhesive foam backing strips).
- b) Stator plate (round printed circuit with two coils), this replaces the contact-breaker plate.
- c) Magnetic rotor (round plated steel unit with two magnets fitted), this replaces the standard auto-advance
- d) Rotor fixing bolts (1.25" x 0.25" BSF & UNF Allen types)
- e) Blue 3M tap connector
- f) Plastic strap
- g) Twin lead with sleeving, 1 metre long (stator plate to transistor box connection)
- h) Terminals: 4 male bullets

Fitting instructions

- 1) Remove the petrol tank (and seat if necessary) to gain access to the existing ignition coil, condenser and associated wiring.
- 2) Disconnect the battery, if fitted.
- 3) Remove the spark-plug and rotor cover (if fitted), and loosen the auto-advance centre bolt. Then rotate the engine to the full advance timing position (see table) by one of the following methods:- (either the compression or exhaust stroke may be used)
 - i) Using the marks provided (1967-on) on the chaincase (inside the rotor cover) and on the rotor, for stroboscopic timing. Unless the marks are known to be accurate it is a wise precaution at this stage to check that they line up when the static full advance timing is set by one of the methods below, and if necessary re-mark the rotor.
 - ii) Using the timing plug on the L.H. crankcase on later models (1969-on).
 - iii) By means of a dial gauge down the spark plug hole or a degree disc on the crankshaft; a marked dipstick may be used in place of a dial gauge on C15 or B40 models but is not accurate enough for the more highly tuned engines.

The full advance timing for engines in a standard state of tune is as follows:-

MODEL - All versions

<u>Before T.D.C</u>	<u>C15/B40</u>	<u>B25</u>	<u>B44</u>	<u>B50</u>
Degrees	33.5	37	28	34
Inches	9/32	0.342	0.266	0.385
Millimetres	7	8.69	6.75	9.78

- 4) Remove kickstart, gear lever and outer timing cover. Remove the points plate and lead from the outer timing cover. Fit the stator plate with its cable entries at the 5 o'clock position, using the existing pillar bolts and washers which should be in the centre of the stator plate slots to allow for final adjustment. The stator plate has a printed circuit on the back - handle it carefully.

- 5) Remove the centre bolt securing the auto-advance mechanism and remove the unit by means of an extractor bolt or by tapping it gently sideways. Replace it with the magnetic rotor, magnets at approximately 3 and 9 o'clock positions, and the appropriate BSF or UNF Allen bolt - do not tighten it yet.
- 6) Replace the outer timing cover, gear lever and kickstart.
- 7) Check that the engine is still at the full advance firing position, then adjust the magnetic rotor position (see Fig.1) so that one magnet is centrally behind the timing hole at 9 o'clock in the stator plate (ignore the hole at 6 o'clock). Tap the rotor on to its taper and tighten the Allen bolt.
- 8) Re-check the engine and magnetic rotor positions and re-adjust the rotor if necessary.

This completes the work at the contact breaker housing apart from the stroboscopic final timing adjustment.

WIRING

If it is necessary to alter wiring lengths and connections to suit any particular installation, all connections must be of the highest quality - wires twisted together will not do (use crimped or soldered connections), and coiling up of surplus lead lengths should be avoided. The wiring work is basically very simple:-

- a) Decide on a suitable location for the transistor box near the ignition coil. It can be fixed either by means of the plastic strap provided, or to a flat surface such as a steering head gusset by first peeling off the protective layer from the self-adhesive backing strips. Do not totally enclose the unit in foam rubber.
- b) Disconnect the external condenser (if fitted) and the existing points lead from the positive (+) coil terminal and the (usually white) supply lead (from the ignition switch) and any other leads, from the negative (-) terminal. There should now only be the H.T. lead connected to the coil; the supply lead and any other leads which were connected to the negative (-) coil terminal, should now be connected to the white lead from the transistor box. It may be necessary to make this connection via the 4-way blue tap connector provided, if several leads are involved.
- c) Connect the negative (-) terminal of the coil to the black lead from the transistor box.
- d) Connect the positive (+) terminal of the coil to the red wire from the transistor box and also to a good earth point on the frame by means of the sleeved red lead with the flat circular terminal.
- e) Connect the twin stator lead (supplied) to the remaining two wires at the transistor box (black/yellow to black/yellow and black/white to black/white), using the male bullet crimp connectors. Tape this lead to the frame, preferably away from the main harness.
- f) Remove any redundant leads or tape up bare ends, and check all connectors for tightness, then replace the spark plug, tank, seat, etc. to enable the engine to be run. Re-connect the battery. Top up the gearbox, if oil has been lost.

FINAL TIMING

- a) 1967-on Start the engine, and after warming up use a strobe lamp and the appropriate timing marks on the alternator rotor and chaincase to adjust finally the ignition timing at approximately 5000 r.p.m., by rotating the stator plate (clockwise to advance and vice-versa) as provided for by the slotted holes for the pillar bolts. If the amount of movement required is not obtainable the rotor will have to be re-set on its taper. Replace the rotor and points covers, once the setting is correct.
- b) Early Models These have no provision for stroboscopic timing adjustment and no attempt should be made to do this by running the engine with the chaincase removed, since the moving parts could cause serious injury. C15 and B40 can be set finally by road test. The advance range provided is approximately 10° camshaft (20° crankshaft).

GENERAL DATA

- 1) This unit can run positive or negative earth as long as the ignition coil is fed from the positive supply.
- 2) The working voltage is 10 to 16 volts.
- 3) The ignition coil used should be a 12 volt type with a primary winding resistance (low tension winding) of more than 3.5 Ohms.
- 4) The maximum ignition coil current through the unit must not exceed 5 amps.
- 5) The ignition coil can go short circuit to earth if the mounting clamp is too tight. If you are not sure mount it in rubber.
- 6) Shorting out the ignition coils can damage the unit. (This unit turns off after a few seconds if the engine is stationary.)
- 7) The resistance of the stator plate should be about 130 Ohms (coils 66 ohms each) , the magnetic rotor should have the south poles of its magnets pointing outwards, shown with a white dot marking.
- 8) The unit will drive the coil up to 10,000 sparks/minute.
- 9) Typical working advance range is 15° at 2,500 R.P.M. camshaft.
- 10) The unit and the peak primary voltage is regulated at 400 Volts.
- 11) This unit must always be operated with the frame or chassis acting as an electrical return, whether positive or negative earth. Also, if the engine is rubber mounted a good earth strap must be provided.
- 12) This unit will operate from an alternator, rectifier, zener diode and capacitor battery-less system, but kick-starting may be more difficult. (IF THE ZENER DISCONNECTS WHEN THE ENGINE IS RUNNING THE IGNITION WILL BE DAMAGED) For this reason we recommend our POWER BOX UNIT. This is volage controlled and cannot damage the system.
- 13) Wiring should be trimmed to the correct length, spare wire should never be coiled up as this can affect the correct running of the ignition system. If possible the wires from the stator plate should be run separately from the main wiring loom.
- 14) Stator plate wires should be tie strapped to a mounting pillar or braced against the engine casing. This prevents the connectors vibrating and possible fracture of the wires over time.
- 15) If an old Boyer Bransden ignition unit is being replaced with a new one, it is advised to recheck the timing using a strobe light.
- 16) It is essential that the existing electrical system is kept in good order, i.e. battery, ignition switch, ignition coil, H.T. cable, plug, plug cap and associated wiring.
- 17) Apart from this, no maintenance is required and the timing cannot vary, unless disturbed. If it is necessary to remove the stator plate from the outer timing cover, reference marks should be painted at the edge to enable it to be replaced without the need for re-timing. Do not disturb the stator plate unnecessarily.

Fig.1

